

# Rise Up! Portland

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Halcyon | Gulf of Maine Research Institute



# Plan & Elevation - *the ellipse* - Caroline Shaw

composed in 2015 | atmospheric CO<sub>2</sub> concentration is 401 PPM

Maine and its offshore islands have  
5,000 miles of coastline.

If unstretched, this coastline  
would extend from Maine to Hawaii.

More than half of Maine's population  
lives on the coast.

By 2030, sea levels in Maine are likely to be one foot higher than they were in 2000.

Sea levels in Maine are likely to rise 4 feet by 2100.

In 2100, our grandchildren will be our age.





If we do not act to mitigate the impacts of sea level rise, between now and 2050, more than 20,000 Mainers will lose their jobs due to the impacts of sea level rise.

We will have spent \$17.5 billion dollars to repair coastal building damage.

Over 300 miles of public roads will be exposed to flooding.

Every coastal town in Maine must plan for a future where the boundaries between land and sea are transient and uncertain.



# Goldberg Variation No. 2 - J.S. Bach

composed in 1741 | atmospheric CO<sub>2</sub> concentration is 277 PPM



Summer high tide



Marginal Way - December 23, 2022





# *Tjønneblomen* “Water Lily” - Gjermund Haugen

composed c. 1950 | 311 PPM

Portland is Maine's largest city.

It is home to 68,313 people.

Portland is 70 square miles.  
22 of these miles are land.  
48 of these miles are water.

Portland's economic and cultural heritage  
is linked to its waterfront.

While Portland is shaped by its surrounding ocean ecosystems and salt marshes,

it has transformed them with infrastructure and development.

Areas that were once natural buffers to coastal flooding are now hard surfaces making low-lying areas even more vulnerable to coastal flooding.

With **one** foot of sea level rise, nuisance flooding in Portland will be more than **ten** times more frequent.



Sea levels have risen 8 inches in Portland since record-keeping began in 1912.

Sea levels in Portland are projected to rise another 2-6 feet by 2100.

The amount of sea level rise we experience depends on the uncertain response of the Antarctic Ice Sheet and our ability to curb emissions.



# Goldberg Variation No. 3 - J.S. Bach

composed in 1741 | 277 PPM



Union Wharf - December 23, 2022



Custom-House Wharf - December 23, 2022



# Shore - Fredrik Sjölin

composed in 2017 | 404 PPM



Driven by youth climate leadership,  
Portland and South Portland declared a  
**climate emergency** in November, 2019.

Many areas in Portland could experience flooding **daily** at each high tide by the end of the century.

Bayside and Commercial Street are two of Portland's most vulnerable communities.

The deep water off of Commercial Street makes Portland the largest tonnage seaport in New England.

Commercial Street is home to 12 public wharfs and hundreds of businesses.

Human infrastructure has altered  
Portland's landscapes and ecosystems.

Prior to the Great Fire of 1866, much of the Bayside  
neighborhood was salt marsh.

Following the fire, it was filled in with gravel and debris.



Today, Bayside is one of Portland's most diverse neighborhoods.

It is home to thousands of people, industry, recreational trails, and businesses both large and small.

Like so many coastal communities in Maine, Portland's present and future will be shaped by the sea, climate, and our ability to respond to the climate crisis with resilience.





# Goldberg Variation No. 4 - J.S. Bach

composed in 1741 | 277 PPM



# String Quartet, Op. 11 - S. Barber

*adagio*

composed in 1935 | 309 PPM



# Antiphon No. 1 - Hildegard von Bingen

composed c. 1154 | ~280 PPM

We must plan for this future.

We must act collectively to advocate for policy that is long-term and forward thinking.

In November 2022, a tide gauge was installed in Back Cove to more accurately predict flooding and sea level rise impacts on the city of Portland.



The city of Portland recently installed valves on the storm drains in Bayside to mitigate the flooding that occurs during high tides.

These valves will not keep out rising seas, but they are a short-term solution to coastal flooding.

This spring, the city will plant 80 trees in Bayside as part of a \$250,000 project to expand Bayside's tree canopy.

These trees will reduce the overall temperature of the neighborhood while helping mitigate coastal erosion and flooding.

In 2022, Portland received two “Community Resilience Partnership” awards from the state of Maine allocating \$67,000 to help build resilient and sustainable communities in the face of climate change.



# Plan & Elevation - *the orangery* - Caroline Shaw

composed in 2015 | 401 PPM

Portland and South Portland's climate action plan,  
"One Climate Future" outlines OUR future.

Portland is committed to reducing community-wide  
greenhouse gas emissions **80%** by **2050**  
from 2017 levels.

By 2040, it plans to run **all** municipal operations on  
**100%** renewable energy.



By 2050, it plans to replace **80%** of natural gas and heating oil use in residences with electric heating and cooling systems.

By 2050, it plans to convert 15% of the cities' impervious surfaces to green infrastructure.

“One Climate Future” is ambitious and broad.

It is innovative and action-oriented.



# Plan & Elevation - *the beech tree* - Caroline Shaw

composed in 2015 | 401 PPM

Rising sea levels require long-term solutions  
and comprehensive planning.

We have all the tools we need to respond to  
sea level rise with resilience.

We must trust each other.



Speak to each other.

Be compassionate.

Take one step at a time.



# RISE UP! Portland

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Photos courtesy of GMRI

With special thank you to:

Hannah Baranes, Gayle Bowness, Brenda Downs,

Sara Mills-Knapp, David Reidmiller & Troy Moon

Gulf of Maine Research Institute

SPACE Gallery

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